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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/557,775	04/25/2000	Tetsuya Ashida	PM 268172	9116

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PILLSBURY WINTHROP, LLP
P.O. BOX 10500
MCLEAN, VA 22102

EXAMINER

NGUYEN, KIMBERLY T

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 08/28/2002

11

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/557,775

SW
Applicant(s)

ASHIDA ET AL.

Examiner

Kimberly T. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,6-12 and 14-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,6-12 and 14-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

This action is in response to the amendment submitted on June 28, 2002.

Claim Rejections - 35 USC § 112

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office Action.

Due to Applicants' amendments, the previous rejection of claim 1 is withdrawn.

Claim Rejections - 35 USC § 103

Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakaki et al., U.S. Pat. No. 5,266,383 in view of Tsubaki et al., U.S. Pat. No. 6,335,102 B1.

Sakaki shows an ink jet recording medium comprising a paper base, a surface layer, and a lower layer (claim 1). Sakaki shows that the surface layer comprises polyvinyl alcohol (hydrophilic binder), silica, polyaluminum chloride (water-soluble polyvalent metal compound) (column 6, lines 55-65 and claim 6), and urea resin (water-soluble plasticizer) (column 6, lines 7-14). Sakaki shows that the lower layer comprises synthetic silica having an average particle size of 5 to 30 micrometers with the amount of the total ink receiving layer coated to be from 2 to 200 g/m² and that the silica has a BET specific surface area of 700m²/g (column 8, lines 31-62 and Table 3). Sakaki shows that the ratio of the silica pigment to the polyvinyl alcohol binder is preferably 1/1 to 10/1 of the total ink receiving layer (50% by weight or less of binder) (column 8, lines 31-50).

Sakaki does not show the average particle diameter of 20nm or less as in instant claims 1 and 7. Sakaki does not show that the surface layer contains 8g/m² or more of the silica particles

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as in instant claims 6 and 8, but shows that the surface layer comprises about 0.3 to 7 g/m² (column 5, lines 49-64). Though Sakaki does not show that the pH of the surface of the surface or lower layer is 3 to 5 as in instant claim 9, Sakaki shows that the ink receiving layer may contain pH controllers (column 10, lines 1-4). However, such ranges are properties which can be easily determined by one of ordinary skill in the art. With regard to the limitation of the ranges, absent a showing of unexpected results, it is obvious to modify the conditions of a composition because they are merely the result of routine experimentation. The experimental modification of prior art in order to optimize operation conditions (e.g. ranges) fails to render claims patentable in the absence of unexpected results. All of the aforementioned limitations are result effective as they control the pH level and ink absorptivity. As such, they are optimizable. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the ink jet recording medium with the particle diameters, concentration of silica particles, and pH since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Sakaki does not specifically show that the silica in the surface layer is synthetic as in instant claim 1; however, Sakaki uses synthetic silica in the lower layer as a void-creating pigment and thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ synthetic silica in the surface layer to help the ink jet recording medium to absorb ink. Further, the surface layer and the lower layer can be combined so that synthetic silica is incorporated into a single layer. Sakaki discloses the claimed invention except for a specific showing that synthetic silica is present in the surface layer. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the

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surface and lower layer since it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art.

Howard v. Detroit Stove Works, 150 U.S. 164 (1893).

Though Sakaki shows that the base paper can include sizing agents and paper force strengthening agents (column 7, lines 58-62), Sakaki does not show that the base paper is water resistant polyolefin-resin coated paper as in instant claims 1 and 14. Tsubaki shows a support for imaging material comprising a polyolefin resin coated paper-based support (Abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a polyolefin resin coated base paper support in Sakaki because it is known in the art that such a base paper provides high gloss and excellent curl resistance and stiffness.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakaki et al., U.S. Pat. No. 5,266,383 in view of Tsubaki et al., U.S. Pat. No. 6,335,102 B1 in further view of Santo et al., U.S. Pat. No. 5,965,252.

Sakaki is relied upon as above for claim 1.

Though Sakaki shows that the base paper can include sizing agents and paper force strengthening agents (column 7, lines 58-62), Sakaki does not show that the base paper is water resistant polyolefin-resin coated paper as in instant claim 1. Tsubaki shows a support for imaging material comprising a polyolefin resin coated paper-based support (Abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a polyolefin resin coated base paper support in Sakaki because it is known in the art that such a base paper provides high gloss and excellent curl resistance and stiffness.

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Sakaki does not show the average particle diameter of 20nm or less as in instant claim 1. However, such ranges are properties which can be easily determined by one of ordinary skill in the art. With regard to the limitation of the ranges, absent a showing of unexpected results, it is obvious to modify the conditions of a composition because they are merely the result of routine experimentation. The experimental modification of prior art in order to optimize operation conditions (e.g. ranges) fails to render claims patentable in the absence of unexpected results. All of the aforementioned limitations are result effective as they control the pH level and ink absorptivity. As such, they are optimizable. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the ink jet recording medium with the particle diameters, concentration of silica particles, and pH since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Sakaki does not specifically show that the silica in the surface layer is synthetic as in instant claim 1; however, Sakaki uses synthetic silica in the lower layer as a void-creating pigment and thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ synthetic silica in the surface layer to help the ink jet recording medium to absorb ink. Further, the surface layer and the lower layer can be combined so that synthetic silica is incorporated into a single layer. Sakaki discloses the claimed invention except for a specific showing that synthetic silica is present in the surface layer. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the surface and lower layer since it has been held that forming in one piece an article which has

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formerly been formed in two pieces and put together involves only routine skill in the art.

Howard v. Detroit Stove Works, 150 U.S. 164 (1893).

Sakaki does not show one of the compounds listed as in instant claim 12. Santo shows an ink jet printing medium comprising a substrate and an ink receiving layer comprising urea resins, polyvinyl chloride (column 9, lines 1-16), and phosphite compounds such as tetraoctylbis(ditridecyl phosphite) titanate and tetraisopropylbis(dioctyl phosphite) titanate (column 5, lines 22-34). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a phosphite compound in an ink receiving layer of an ink jet recording sheet since it is known that these compounds are used as a plasticizer and titanate coupling agent.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakaki et al., U.S. Pat. No. 5,266,383 in view of Tsubaki et al., U.S. Pat. No. 6,335,102 B1.

Sakaki is relied upon as above for claim 1.

Sakaki does not show the average particle diameter of 20nm or less as in instant claim 1. However, such ranges are properties which can be easily determined by one of ordinary skill in the art. With regard to the limitation of the ranges, absent a showing of unexpected results, it is obvious to modify the conditions of a composition because they are merely the result of routine experimentation. The experimental modification of prior art in order to optimize operation conditions (e.g. ranges) fails to render claims patentable in the absence of unexpected results. All of the aforementioned limitations are result effective as they control the pH level and ink absorptivity. As such, they are optimizable. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the ink jet recording medium with the

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particle diameters, concentration of silica particles, and pH since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Sakaki does not specifically show that the silica in the surface layer is synthetic as in instant claim 1; however, Sakaki uses synthetic silica in the lower layer as a void-creating pigment and thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ synthetic silica in the surface layer to help the ink jet recording medium to absorb ink. Further, the surface layer and the lower layer can be combined so that synthetic silica is incorporated into a single layer. Sakaki discloses the claimed invention except for a specific showing that synthetic silica is present in the surface layer. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the surface and lower layer since it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art.

Howard v. Detroit Stove Works, 150 U.S. 164 (1893).

Though Sakaki shows that the base paper can include sizing agents and paper force strengthening agents (column 7, lines 58-62), Sakaki does not show that the base paper is water resistant polyolefin-resin coated paper as in instant claims 1 and 14. Tsubaki shows a support for imaging material comprising a polyolefin resin coated paper-based support (Abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a polyolefin resin coated base paper support in Sakaki because it is known in the art that such a base paper provides high gloss and excellent curl resistance and stiffness.

Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakaki et al., U.S. Pat. No. 5,266,383 in view of Kasahara et al., U.S. Pat. No. 6,165,606.

Sakaki is relied upon as above for claim 1.

Sakaki does not show the average particle diameter of 20nm or less as in instant claim 1. However, such ranges are properties which can be easily determined by one of ordinary skill in the art. With regard to the limitation of the ranges, absent a showing of unexpected results, it is obvious to modify the conditions of a composition because they are merely the result of routine experimentation. The experimental modification of prior art in order to optimize operation conditions (e.g. ranges) fails to render claims patentable in the absence of unexpected results. All of the aforementioned limitations are result effective as they control the pH level and ink absorptivity. As such, they are optimizable. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the ink jet recording medium with the particle diameters, concentration of silica particles, and pH since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Sakaki does not specifically show that the silica in the surface layer is synthetic as in instant claim 1; however, Sakaki uses synthetic silica in the lower layer as a void-creating pigment and thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ synthetic silica in the surface layer to help the ink jet recording medium to absorb ink. Further, the surface layer and the lower layer can be combined so that synthetic silica is incorporated into a single layer. Sakaki discloses the claimed invention except for a specific showing that synthetic silica is present in the surface layer. It would have been

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obvious to one of ordinary skill in the art at the time the invention was made to combine the surface and lower layer since it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art.

Howard v. Detroit Stove Works, 150 U.S. 164 (1893).

Though Sakaki shows that the base paper can include sizing agents and paper force strengthening agents (column 7, lines 58-62), Sakaki does not show that the base paper is water resistant polyolefin-resin coated paper as in instant claim 1.

Kasahara shows a polyolefin coated plastic film support and an ink jet recording layer comprising a hydrophilic binder of polyvinyl alcohol (column 13, lines 23-43), fine inorganic particles of synthetic silica (column 7, lines 47-62), and a cross-linking agent of boric acid (column 15, lines 5-20). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a polyolefin resin coated base support in Sakaki because it is known in the art that such a base support provides high gloss and excellent curl resistance and stiffness. Further, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use boric acid as a cross-linking agent with the hydrophilic binder of polyvinyl alcohol since it is known that such an agent is used with polyvinyl alcohol to improve the film forming properties of the void-containing layer, the water-resisting properties, and the film strength after printing.

Response to Arguments

Applicant's arguments with respect to claims 1, 2, 4, 6-12 and 14-16 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly T. Nguyen whose telephone number is (703) 308-8176. The examiner can normally be reached on Monday to Friday, except on every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia H. Kelly can be reached on (703) 308-0449. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Kimberly T. Nguyen
Examiner
August 23, 2002

CYNTHIA H. KELLY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

